

New Claims:

ART 34 AMDT

What ~~Is~~ Claimed ~~Is~~:

1. A method of packaging electronic components comprising the following steps:

- forming a plurality of cavities (6) in a package substrate (2; 20), the package substrate (20) being made of a semiconductor material, in particular silicon, or the package substrate (2) being made of photopatternable glass;
- mounting the electronic components (8) in the cavities (6);
- sealing the cavities (6) with a cover substrate or a cover layer (4); and
- separating the components (8) packaged in this way.

2. The method according to Claim 1, wherein the package substrate (2) is provided on its side facing away from the cover substrate or the cover layer (4) with a metal layer (3) for contacting the electronic components (8).

3. The method according to Claim 1 or 2, wherein the package substrate (2) is provided with an insulation layer (5) on its side facing the cover substrate or cover layer (4).

4. The method according to one of Claims 1 through 3, wherein the cavities (6) are produced by etching using photostructuring.

5. The method according to one of Claims 1 through 4, wherein the cavities (6) are designed as passages through the package substrate (2).

6. The method according to one of Claims 1 through 4, wherein shallow cavities (6) to accommodate the electronic

components (8) are provided in the package substrate (2).

7. The method according to one of Claims 1 through 6, wherein a number of components (8) corresponding to the number of cavities (6) formed on the package substrate (2) is applied to a component carrier layer (16), and the step of placing the electronic components (8) into the cavities (6) is carried out by joining the package substrate (2) to the component carrier layer (16).

8. The method according to Claim 7, wherein the component carrier layer (16) is a metal layer, in particular a silver layer.

9. The method according to one of Claims 1 through 8, wherein the electronic component (8) is a diode, in particular a Gunn diode.

10. The method according to one of Claims 1 through 9, wherein the cover substrate (4) is made of a semiconductor material, in particular silicon, which is used to contact a terminal of the electronic components (8).

11. The method according to one of Claims 8 through 10, wherein contact springs (9) are applied to the cover substrate (4) for contacting the electronic components (8).

12. The method according to Claim 11, wherein the contact springs (9) are produced by galvanic metal deposition.

13. The method according to one of Claims 1 through 9, wherein the cover layer (4) is made of an organic dielectric.

14. The method according to Claim 13, wherein the organic dielectric is a photosensitive lacquer, and a contact (11) for establishing an electric connection to

a terminal of the respective component (8) is applied by etching contact holes through the photosensitive lacquer and applying a metal layer.

15. The method according to one of Claims 1 through 14, wherein the packaged components (8) are separated by sawing.

16. The method according to one of Claims 1 through 15, wherein the package substrate (20) is designed as an insulating carrier layer, the cavities (6) being enclosed by insulator structures (21) arranged outside the package substrate (20); the components (8) are applied to a component carrier layer (16), and the components (8) are mounted in the cavities by joining the component carrier layer (16), the insulator structures (21) and the cover substrate (4).

17. The method according to Claim 16, wherein the cover substrate (4) and the package substrate (20) are first joined, then the separate insulator structures (21) are formed, and next the component carrier layer (16) is joined to the electronic components (8).

18. The method according to Claim 16, wherein the component carrier layer (16) and the package substrate (20) are joined first, then the separate insulator structures are formed, and next the cover substrate (4) is joined.

19. The method according to one of Claims 16 through 18, wherein the package substrate (20) is designed as a carrier layer made of a photopatternable glass, and the separate insulator structures (21) are exposed by selective etching of the glass.

20. The method according to Claim 19, wherein the cover substrate (4) is provided with contact springs (9) for contacting electric terminals of the

electronic components (8).

21. The method according to claim 20,
wherein the contact springs (9) are produced by galvanic
deposition of metal.

$$\begin{array}{ccccccc} \text{1991} & \text{1992} & \text{1993} & \text{1994} & \text{1995} & \text{1996} & \text{1997} \\ \text{1998} & \text{1999} & \text{2000} & \text{2001} & \text{2002} & \text{2003} & \text{2004} \\ \text{2005} & \text{2006} & \text{2007} & \text{2008} & \text{2009} & \text{2010} & \text{2011} \\ \text{2012} & \text{2013} & \text{2014} & \text{2015} & \text{2016} & \text{2017} & \text{2018} \\ \text{2019} & \text{2020} & \text{2021} & \text{2022} & \text{2023} & \text{2024} & \text{2025} \end{array}$$